

EXHIBIT A

Manual of PATENT EXAMINING PROCEDURE

Original Eighth Edition, August 2001
Latest Revision September 2007



U.S. DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

The U.S. Patent and Trademark Office does not handle the sale of the Manual, distribution of notices and revisions, or change of address of those on the subscription list. Correspondence relating to existing subscriptions should be sent to the Superintendent of Documents at the following address:

Superintendent of Documents
Mail List Section
Washington, DC 20402

Telephone: 202-512-2267

Inquiries relating to purchasing the Manual should be directed to:

Superintendent of Documents
United States Government Printing Office
Washington, DC 20402

Telephone: 202-512-1800

Orders for reproduced copies of individual replacement pages or of previous revisions of the Manual should be sent to the following address:

Mail Stop Document Services
Director of the U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Telephone: 1-800-972-6382 or 571-272-3150

Previous editions and revisions of the Manual are available on microfilm in the Patent Search Room.
The Manual is available on CD-ROM and on diskette from:

U.S. Patent and Trademark Office
Office of Electronic Information Products
MDW 4C18, P.O. Box 1450
Alexandria, VA 22313-1450

Telephone: 571-272-5600

Employees of the U.S. Patent and Trademark Office should direct their requests for the Manual, replacement pages, notices, and revisions to the Office of Patent Training.

Telephone: 571-272-7222

Pursuant to the Patent and Trademark Office Efficiency Act (PTOEA) (Pub. L. 106-113, 113 Stat. 1501A-572), the head of the United States Patent and Trademark Office (USPTO) is the "Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office." The Director is assisted by the "Deputy Under Secretary of Commerce for Intellectual Property and Deputy Director of the United States Patent and Trademark Office." The patent operations of the USPTO are now headed by the "Commissioner for Patents." The trademark operations of the USPTO are now headed by the "Commissioner for Trademarks." Under section 4741(b) of the PTOEA, any reference to the Commissioner of Patents and Trademarks, the Assistant Commissioner for Patents, or the Assistant Commissioner for Trademarks is deemed to refer to the Director, the Commissioner for Patents, or the Commissioner for Trademarks, respectively. See "Reestablishment of the Patent and Trademark Office as the United States Patent and Trademark Office" published in the *Federal Register* at 65 FR 17858 (Apr. 5, 2000), and in the *Official Gazette of the United States Patent and Trademark Office* at 1234 O.G. 41 (May 9, 2000).

Additions to the text of the Manual are indicated by arrows (><) inserted in the text. Deletions are indicated by a single asterisk (*) where a single word was deleted and by two asterisks (**) where more than one word was deleted. The use of three or five asterisks in the body of the laws, rules, treaties, and administrative instructions indicates a portion of the law, rule, treaty, or administrative instruction which was not reproduced.

First Edition, November 1949
Second Edition, November 1953
Third Edition, November 1961
Fourth Edition, June 1979
Fifth Edition, August 1983
Sixth Edition, January 1995
Seventh Edition, July 1998
Eighth Edition, August 2001
Revision 1, February 2003
Revision 2, May 2004
Revision 3, August 2005
Revision 4, October 2005
Revision 5, August 2006
Revision 6, September 2007

Chapter 2100 Patentability

2105	Patentable Subject Matter — Living Subject Matter	2126.01	Date of Availability of a Patent As a Reference
2106	Patent Subject Matter Eligibility	2126.02	Scope of Reference's Disclosure Which Can Be Used to Reject Claims When the Reference Is a "Patent" but Not a "Publication"
2106.01	Computer-Related Nonstatutory Subject Matter	2127	Domestic and Foreign Patent Applications as Prior Art
2106.02	Mathematical Algorithms	2128	"Printed Publications" as Prior Art
2107	Guidelines for Examination of Applications for Compliance with the Utility Requirement	2128.01	Level of Public Accessibility Required
2107.01	General Principles Governing Utility Rejections	2128.02	Date Publication Is Available as a Reference
2107.02	Procedural Considerations Related to Rejections for Lack of Utility	2129	Admissions as Prior Art
2107.03	Special Considerations for Asserted Therapeutic or Pharmacological Utilities	2131	Anticipation — Application of 35 U.S.C. 102(a), (b), and (e)
2111	Claim Interpretation; Broadest Reasonable Interpretation	2131.01	Multiple Reference 35 U.S.C. 102 Rejections
2111.01	Plain Meaning	2131.02	Genus-Species Situations
2111.02	Effect of Preamble	2131.03	Anticipation of Ranges
2111.03	Transitional Phrases	2131.04	Secondary Considerations
2111.04	"Adapted to," "Adapted for," "Wherein," and "Whereby" Clauses	2131.05	Nonanalogous or Disparaging Prior Art
2112	Requirements of Rejection Based on Inherency; Burden of Proof	2132	35 U.S.C. 102(a)
2112.01	Composition, Product, and Apparatus Claims	2132.01	Publications as 35 U.S.C. 102(a) Prior Art
2112.02	Process Claims	2133	35 U.S.C. 102(b)
2113	Product-by-Process Claims	2133.01	Rejections of Continuation-In-Part (CIP) Applications
2114	Apparatus and Article Claims — Functional Language	2133.02	Rejections Based on Publications and Patents
2115	Material or Article Worked Upon by Apparatus	2133.03	Rejections Based on "Public Use" or "On Sale"
2116	Material Manipulated in Process	2133.03(a)	"Public Use"
2116.01	Novel, Unobvious Starting Material or End Product	2133.03(b)	"On Sale"
2121	Prior Art; General Level of Operability Required to Make a Prima Facie Case	2133.03(c)	The "Invention"
2121.01	Use of Prior Art in Rejections Where Operability Is in Question	2133.03(d)	"In This Country"
2121.02	Compounds and Compositions — What Constitutes Enabling Prior Art	2133.03(e)	Permitted Activity; Experimental Use
2121.03	Plant Genetics — What Constitutes Enabling Prior Art	2133.03(e)(1)	Commercial Exploitation
2121.04	Apparatus and Articles — What Constitutes Enabling Prior Art	2133.03(e)(2)	Intent
2122	Discussion of Utility in the Prior Art	2133.03(e)(3)	"Completeness" of the Invention
2123	Rejection Over Prior Art's Broad Disclosure Instead of Preferred Embodiments	2133.03(e)(4)	Factors Indicative of an Experimental Purpose
2124	Exception to the Rule That the Critical Reference Date Must Precede the Filing Date	2133.03(e)(5)	Experimentation and Degree of Supervision and Control
2125	Drawings as Prior Art	2133.03(e)(6)	Permitted Experimental Activity and Testing
2126	Availability of a Document as a "Patent" for Purposes of Rejection Under 35 U.S.C. 102(a), (b), and (d)	2133.03(e)(7)	Activity of an Independent Third Party Inventor
		2134	35 U.S.C. 102(c)
		2135	35 U.S.C. 102(d)
		2135.01	The Four Requirements of 35 U.S.C. 102(d)
		2136	35 U.S.C. 102(e)
		2136.01	Status of U.S. Patent as a Reference Before and After Issuance
		2136.02	Content of the Prior Art Available Against the Claims
		2136.03	Critical Reference Date
		2136.04	Different Inventive Entity; Meaning of "By Another"

MANUAL OF PATENT EXAMINING PROCEDURE

- 2136.05 Overcoming a Rejection Under 35 U.S.C. 102(e)
- 2137 35 U.S.C. 102(f)**
- 2137.01 Inventorship
- 2137.02 Applicability of 35 U.S.C. 103(c)
- 2138 35 U.S.C. 102(g)**
- 2138.01 Interference Practice
- 2138.02 "The Invention Was Made in This Country"
- 2138.03 "By Another Who Has Not Abandoned, Suppressed, or Concealed It"
- 2138.04 "Conception"
- 2138.05 "Reduction to Practice"
- 2138.06 "Reasonable Diligence"
- 2141 >Examination Guidelines for Determining Obviousness Under< 35 U.S.C. 103****
- 2141.01 Scope and Content of the Prior Art
- 2141.01(a) Analogous and Nonanalogous Art
- 2141.02 Differences Between Prior Art and Claimed Invention
- 2141.03 Level of Ordinary Skill in the Art
- 2142 Legal Concept of Prima Facie Obviousness**
- 2143 >Examples of< Basic Requirements of a Prima Facie Case of Obviousness**
- 2143.01 Suggestion or Motivation to Modify the References
- 2143.02 Reasonable Expectation of Success Is Required
- 2143.03 All Claim Limitations Must Be
**>Considered<
- 2144 ** Supporting a Rejection Under 35 U.S.C. 103**
- 2144.01 Implicit Disclosure
- 2144.02 Reliance on Scientific Theory
- 2144.03 Reliance on Common Knowledge in the Art or "Well Known" Prior Art
- 2144.04 Legal Precedent as Source of Supporting Rationale
- 2144.05 Obviousness of Ranges
- 2144.06 Art Recognized Equivalence for the Same Purpose
- 2144.07 Art Recognized Suitability for an Intended Purpose
- 2144.08 Obviousness of Species When Prior Art Teaches Genus
- 2144.09 Close Structural Similarity Between Chemical Compounds (Homologs, Analogues, Isomers)
- 2145 Consideration of Applicant's Rebuttal Arguments**
- 2146 35 U.S.C. 103(c)**
- 2161 Three Separate Requirements for Specification Under 35 U.S.C. 112, First Paragraph**
- 2161.01 Computer Programming and 35 U.S.C. 112, First Paragraph
- 2162 Policy Underlying 35 U.S.C. 112, First Paragraph**
- 2163 Guidelines for the Examination of Patent Applications under the 35 U.S.C. 112, First Paragraph, "Written Description" Requirement**
- 2163.01 Support for the Claimed Subject Matter in Disclosure
- 2163.02 Standard for Determining Compliance With the Written Description Requirement
- 2163.03 Typical Circumstances Where Adequate Written Description Issue Arises
- 2163.04 Burden on the Examiner With Regard to the Written Description Requirement
- 2163.05 Changes to the Scope of Claims
- 2163.06 Relationship of Written Description Requirement to New Matter
- 2163.07 Amendments to Application Which Are Supported in the Original Description
- 2163.07(a) Inherent Function, Theory, or Advantage
- 2163.07(b) Incorporation by Reference
- 2164 The Enablement Requirement**
- 2164.01 Test of Enablement
- 2164.01(a) Undue Experimentation Factors
- 2164.01(b) How to Make the Claimed Invention
- 2164.01(c) How to Use the Claimed Invention
- 2164.02 Working Example
- 2164.03 Relationship of Predictability of the Art and the Enablement Requirement
- 2164.04 Burden on the Examiner Under the Enablement Requirement
- 2164.05 Determination of Enablement Based on Evidence As a Whole
- 2164.05(a) Specification Must Be Enabling as of the Filing Date
- 2164.05(b) Specification Must Be Enabling to Persons Skilled in the Art
- 2164.06 Quantity of Experimentation
- 2164.06(a) Examples of Enablement Issues-Missing Information
- 2164.06(b) Examples of Enablement Issues — Chemical Cases
- 2164.06(c) Examples of Enablement Issues — Computer Programming Cases
- 2164.07 Relationship of Enablement Requirement to Utility Requirement of 35 U.S.C. 101
- 2164.08 Enablement Commensurate in Scope With the Claims
- 2164.08(a) Single Means Claim
- 2164.08(b) Inoperative Subject Matter
- 2164.08(c) Critical Feature Not Claimed
- 2165 The Best Mode Requirement**

PATENTABILITY

2105

- 2165.01 Considerations Relevant to Best Mode
- 2165.02 Best Mode Requirement Compared to Enablement Requirement
- 2165.03 Requirements for Rejection for Lack of Best Mode
- 2165.04 Examples of Evidence of Concealment
- 2171 Two Separate Requirements for Claims Under 35 U.S.C. 112, Second Paragraph**
- 2172 Subject Matter Which Applicants Regard as Their Invention**
 - 2172.01 Unclaimed Essential Matter
- 2173 Claims Must Particularly Point Out and Distinctly Claim the Invention**
 - 2173.01 Claim Terminology
 - 2173.02 Clarity and Precision
 - 2173.03 Inconsistency Between Claim and Specification Disclosure or Prior Art
 - 2173.04 Breadth Is Not Indefiniteness
 - 2173.05 Specific Topics Related to Issues Under 35 U.S.C. 112, Second Paragraph
 - 2173.05(a) New Terminology
 - 2173.05(b) Relative Terminology
 - 2173.05(c) Numerical Ranges and Amounts Limitations
 - 2173.05(d) Exemplary Claim Language ("for example," "such as")
 - 2173.05(e) Lack of Antecedent Basis
 - 2173.05(f) Reference to Limitations in Another Claim
 - 2173.05(g) Functional Limitations
 - 2173.05(h) Alternative Limitations
 - 2173.05(i) Negative Limitations
 - 2173.05(j) Old Combination
 - 2173.05(k) Aggregation
 - 2173.05(m) Prolix
 - 2173.05(n) Multiplicity
 - 2173.05(o) Double Inclusion
 - 2173.05(p) Claim Directed to Product-By-Process or Product and Process
 - 2173.05(q) "Use" Claims
 - 2173.05(r) Omnibus Claim
 - 2173.05(s) Reference to Figures or Tables
 - 2173.05(t) Chemical Formula
 - 2173.05(u) Trademarks or Trade Names in a Claim
 - 2173.05(v) Mere Function of Machine
 - 2173.06 Prior Art Rejection of Claim Rejected as Indefinite
- 2174 Relationship Between the Requirements of the First and Second Paragraphs of 35 U.S.C. 112**
- 2181 Identifying a 35 U.S.C. 112, Sixth Paragraph Limitation**
- 2182 Scope of the Search and Identification of the Prior Art**

- 2183 Making a Prima Facie Case of Equivalence**
- 2184 Determining Whether an Applicant Has Met the Burden of Proving Nonequivalence After a Prima Facie Case Is Made**
- 2185 Related Issues Under 35 U.S.C. 112, First or Second Paragraphs**
- 2186 Relationship to the Doctrine of Equivalents**
- 2190 Prosecution Laches**

2105 Patentable Subject Matter — Living Subject Matter [R-1]

The decision of the Supreme Court in *Diamond v. Chakrabarty*, 447 U.S. 303, 206 USPQ 193 (1980), held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. 101. It is clear from the Supreme Court decision and opinion that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability. The test set down by the Court for patentable subject matter in this area is whether the living matter is the result of human intervention.

In view of this decision, the Office has issued these guidelines as to how 35 U.S.C. 101 will be interpreted.

The Supreme Court made the following points in the *Chakrabarty* opinion:

1. "Guided by these canons of construction, this Court has read the term 'manufacture' in § 101 in accordance with its dictionary definition to mean 'the production of articles for use from raw materials prepared by giving to these materials new forms, qualities, properties, or combinations whether by hand labor or by machinery.'"

2. "In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope."

3. "The Act embodied Jefferson's philosophy that 'ingenuity should receive a liberal encouragement.' 5 Writings of Thomas Jefferson, at 75-76. See *Graham v. John Deere Co.*, 383 U.S. 1, 7-10 (1966). Subsequent patent statutes in 1836, 1870, and 1874 employed this same broad language. In 1952, when the patent laws were recodified, Congress replaced the word 'art' with 'process,' but otherwise left Jefferson's language intact. The Committee Reports accompanying the 1952 act inform us that Congress intended statutory subject matter to 'include any thing under the sun that is made by man.' S. Rep. No. 1797, 82d Cong., 2d Sess., 5 (1952)."

4. "This is not to suggest that § 101 has no limits or that it embraces every discovery. The laws of nature,

PATENTABILITY

2142

1656 (Fed. Cir. 2004)(holding that a drawing made by an engineer that was not prior art may nonetheless “be used to demonstrate a motivation to combine implicit in the knowledge of one of ordinary skill in the art”).

>

II. < SPECIFYING A PARTICULAR LEVEL OF SKILL IS NOT NECESSARY WHERE THE PRIOR ART ITSELF REFLECTS AN APPROPRIATE LEVEL

If the only facts of record pertaining to the level of skill in the art are found within the prior art of record, the court has held that an invention may be held to have been obvious without a specific finding of a particular level of skill where the prior art itself reflects an appropriate level. *Chore-Time Equipment, Inc. v. Cumberland Corp.*, 713 F.2d 774, 218 USPQ 673 (Fed. Cir. 1983). See also *Okajima v. Bourdeau*, 261 F.3d 1350, 1355, 59 USPQ2d 1795, 1797 (Fed. Cir. 2001).

>

III. < ASCERTAINING LEVEL OF ORDINARY SKILL IS NECESSARY TO MAINTAIN OBJECTIVITY

“The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991). The examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made, and not to the inventor, a judge, a layman, those skilled in remote arts, or to geniuses in the art at hand. *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984).

2142 Legal Concept of *Prima Facie* Obviousness [R-6]

The legal concept of *prima facie* obviousness is a procedural tool of examination which applies broadly to all arts. It allocates who has the burden of going forward with production of evidence in each step of the examination process. See *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Saun-*

ders, 444 F.2d 599, 170 USPQ 213 (CCPA 1971); *In re Tiffin*, 443 F.2d 394, 170 USPQ 88 (CCPA 1971), *amended*, 448 F.2d 791, 171 USPQ 294 (CCPA 1971); *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness. If, however, the examiner does produce a *prima facie* case, the burden of coming forward with evidence or arguments shifts to the applicant who may submit additional evidence of nonobviousness, such as comparative test data showing that the claimed invention possesses improved properties not expected by the prior art. The initial evaluation of *prima facie* obviousness thus relieves both the examiner and applicant from evaluating evidence beyond the prior art and the evidence in the specification as filed until the art has been shown to *>render obvious< the claimed invention.

To reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical “person of ordinary skill in the art” when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention “as a whole” would have been obvious at that time to that person. Knowledge of applicant’s disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the “differences,” conduct the search and evaluate the “subject matter as a whole” of the invention. The tendency to resort to “hindsight” based upon applicant’s disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

ESTABLISHING A *PRIMA FACIE* CASE OF OBVIOUSNESS

**>The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396

(2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval). <

If the examiner determines there is factual support for rejecting the claimed invention under 35 U.S.C. 103, the examiner must then consider any evidence supporting the patentability of the claimed invention, such as any evidence in the specification or any other evidence submitted by the applicant. The ultimate determination of patentability is based on the entire record, by a preponderance of evidence, with due consideration to the persuasiveness of any arguments and any secondary evidence. *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). The legal standard of "a preponderance of evidence" requires the evidence to be more convincing than the evidence which is offered in opposition to it. With regard to rejections under 35 U.S.C. 103, the examiner must provide evidence which as a whole shows that the legal determination sought to be proved (i.e., the reference teachings establish a *prima facie* case of obviousness) is more probable than not.

When an applicant submits evidence, whether in the specification as originally filed or in reply to a rejection, the examiner must reconsider the patentability of the claimed invention. The decision on patentability must be made based upon consideration of all the evidence, including the evidence submitted by the examiner and the evidence submitted by the applicant. A decision to make or maintain a rejection in the face of all the evidence must show that it was based on the totality of the evidence. Facts established by rebuttal evidence must be evaluated along with the facts on which the conclusion of obviousness was reached, not against the conclusion itself. *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990).

See *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984) for a discussion of the proper roles of the examiner's *prima facie* case and applicant's rebut-

tal evidence in the final determination of obviousness. See MPEP § 706.02(j) for a discussion of the proper contents of a rejection under 35 U.S.C. 103.

2143 >Examples of< Basic Requirements of a *Prima Facie* Case of Obviousness

****>**The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395-97 (2007) identified a number of rationales to support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in *Graham*. The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit.

EXEMPLARY RATIONALES

Exemplary rationales that may support a conclusion of obviousness include:

(A) Combining prior art elements according to known methods to yield predictable results;

(B) Simple substitution of one known element for another to obtain predictable results;

(C) Use of known technique to improve similar devices (methods, or products) in the same way;

(D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

(F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

(G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.